AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): A method comprising:

selecting a first ~~parameter~~ electrode configuration for a neurostimulator;

receiving an indication of observed efficacy of the first ~~parameter~~ electrode configuration; and

selecting a second ~~parameter~~ electrode configuration for the neurostimulator based on the indication of observed efficacy and a genetic algorithm, <u>wherein each of the electrode configurations defines a combination of particular electrodes selected from a set of electrodes for delivery of neurostimulation energy, the electrode configurations further defining polarities for each of the electrodes in the combination.</u>

Claims 2 and 3 (Canceled).

Claim 4 (Currently amended): The method of claim ~~2~~ 1, wherein the electrodes are carried by two or more implanted leads.

Claim 5 (Original): The method of claim 4, wherein the electrodes are associated with different target regions within a body of a patient.

Claim 6 (Original): The method of claim 4, wherein the leads are implanted proximate a spine of a patient.

Claim 7 (Currently amended): The method of claim ~~2~~ 1, further comprising iteratively selecting additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm.

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Claim 8 (Original): The method of claim 7, further comprising terminating the iterative selection of the additional electrode configurations when one or more termination criteria are satisfied.

Claim 9 (Original): The method of claim 8, wherein the termination criteria include selection of one of the electrode configurations with an observed efficacy that satisfies a threshold efficacy.

Claim 10 (Currently amended): The method of claim ~~2~~ 1, further comprising:

iteratively selecting additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm;

terminating the iterative selection of the additional electrode configurations at a final electrode configuration when one or more termination criteria are satisfied; and

programming the neurostimulator to employ the final electrode configuration in delivery of neurostimulation therapy.

Claim 11 (Original): The method of claim 10, wherein the neurostimulator is a spinal cord stimulator, and the final electrode configuration includes electrodes deployed on one more implanted spinal leads.

Claim 12 (Currently amended): The method of claim 11, wherein the ~~final electrode configuration defines a combination of two electrodes from a~~ set of electrodes comprises at least eight electrodes.

Claim 13 (Currently amended): The method of claim 1, wherein selecting the first and second ~~parameter~~ electrode configurations includes suggesting the first and second ~~parameter~~ electrode configurations to a clinician.

Claim 14 (Original): The method of claim 1, wherein receiving an indication relating to observed efficacy includes receiving user input indicating observed efficacy.

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Claim 15 (Original): The method of claim 1, further comprising updating the genetic algorithm based on the observed efficacy.

Claim 16 (Currently amended):   The method of claim 15, wherein updating the genetic algorithm comprises performing at least one of cross-over between different solutions identified by the genetic algorithm and or mutation of one or more solutions identified by the genetic algorithm.

Claim 17 (Currently amended):   The method of claim 16, wherein the genetic algorithm identifies solutions associated with the first and second parameter electrode configurations, and updating the genetic algorithm includes generating one or more successive generations of the solutions.

Claim 18 (Original): The method of claim 16, wherein cross-over includes swapping electrodes between different solutions.

Claim 19 (Original): The method of claim 16, wherein mutation includes introducing random electrode changes in different solutions.

Claim 20 (Currently amended):   A computer-readable medium comprising instructions to cause a processor to:
      select a first parameter electrode configuration for a neurostimulator;
      receive an indication of observed efficacy of the first parameter electrode configuration; and
      select a second parameter electrode configuration for the neurostimulator based on the indication of observed efficacy and a genetic algorithm, wherein each of the electrode configurations defines a combination of particular electrodes selected from a set of electrodes for delivery of neurostimulation energy, the electrode configurations further defining polarities for each of the electrodes in the combination.

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Claims 21 and 22 (Canceled).

Claim 23 (Currently amended): The computer-readable medium of claim 21 20, wherein the electrodes are carried by two or more implanted leads.

Claim 24 (Original): The computer-readable medium of claim 23, wherein the electrodes are associated with different target regions within a body of a patient.

Claim 25 (Original): The computer-readable medium of claim 23, wherein the leads are implanted proximate a spine of a patient.

Claim 26 (Currently amended): The computer-readable medium of claim 21 20, further comprising instructions to cause the processor to iteratively select additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm.

Claim 27 (Original): The computer-readable medium of claim 26, further comprising instructions to cause the processor to terminate the iterative selection of the additional electrode configurations when one or more termination criteria are satisfied.

Claim 28 (Original): The computer-readable medium of claim 27, wherein the termination criteria include selection of one of the electrode configurations with an observed efficacy that satisfies a threshold efficacy.

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Claim 29 (Currently amended): The computer-readable medium of claim ~~21~~ 20, further comprising instructions to cause the processor to:

iteratively select additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm;

terminate the iterative selection of the additional electrode configurations at a final electrode configuration when one or more termination criteria are satisfied; and

program the neurostimulator to employ the final electrode configuration in delivery of neurostimulation therapy.

Claim 30 (Original): The computer-readable medium of claim 29, wherein the neurostimulator is a spinal cord stimulator, and the final electrode configuration includes electrodes deployed on one more implanted spinal leads.

Claim 31 (Currently amended): The computer-readable medium of claim 30, wherein the ~~final electrode configuration defines a combination of two electrodes from a~~ set of electrodes comprises at least eight electrodes.

Claim 32 (Currently amended): The computer-readable medium of claim 20, wherein the instructions cause the processor to suggest the first and second ~~parameter~~ electrode configurations to a clinician.

Claim 33 (Original): The computer-readable medium of claim 20, wherein the instructions to cause the processor to receive an indication relating to observed efficacy include instructions to cause the processor to receive user input indicating observed efficacy.

Claim 34 (Original): The computer-readable medium of claim 20, further comprising updating the genetic algorithm based on the observed efficacy.

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Claim 35 (Currently amended):   The computer-readable medium of claim 34, wherein updating the genetic algorithm comprises performing at least one of cross-over between different solutions identified by the genetic algorithm ~~and~~ or mutation of one or more solutions identified by the genetic algorithm.

Claim 36 (Currently amended):   The computer-readable medium of claim 35, wherein the genetic algorithm identifies solutions associated with the first and second ~~parameter~~ electrode configurations, and updating the genetic algorithm includes generating one or more successive generations of the solutions.

Claim 37 (Original): The computer-readable medium of claim 35, wherein cross-over includes swapping electrodes between different solutions.

Claim 38 (Original): The computer-readable medium of claim 35, wherein mutation includes introducing random electrode changes in different solutions.

Claim 39 (Currently amended):   A device comprising a processor programmed to:
        select a first ~~parameter~~ electrode configuration for a neurostimulator;
        receive an indication of observed efficacy of the first ~~parameter~~ electrode configuration;
and
        select a second ~~parameter~~ electrode configuration for the neurostimulator based on the indication of observed efficacy and a genetic algorithm, wherein each of the electrode configurations defines a combination of particular electrodes selected from a set of electrodes for delivery of neurostimulation energy, the electrode configurations further defining polarities for each of the electrodes in the combination.

Claims 40 and 41 (Canceled).

Claim 42 (Currently amended):   The device of claim ~~40~~ 39, wherein the electrodes are carried by two or more implanted leads.

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Claim 43 (Original): The device of claim 42, wherein the electrodes are associated with different target regions within a body of a patient.

Claim 44 (Original): The device of claim 42, wherein the leads are implanted proximate a spine of a patient.

Claim 45 (Currently amended): The device of claim 40 39, wherein the processor iteratively selects additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm.

Claim 46 (Original): The device of claim 45, wherein the processor terminates the iterative selection of the additional electrode configurations when one or more termination criteria are satisfied.

Claim 47 (Original): The device of claim 46, wherein the termination criteria include selection of one of the electrode configurations with an observed efficacy that satisfies a threshold efficacy.

Claim 48 (Currently amended): The device of claim 40 39, wherein the processor:
iteratively selects additional electrode configurations for the neurostimulator based on observed efficacy of preceding electrode configurations and the genetic algorithm;
terminates the iterative selection of the additional electrode configurations at a final electrode configuration when one or more termination criteria are satisfied; and
programs the neurostimulator to employ the final electrode configuration in delivery of neurostimulation therapy.

Claim 49 (Original): The device of claim 48, wherein the neurostimulator is a spinal cord stimulator, and the final electrode configuration includes electrodes deployed on one more implanted spinal leads.

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Claim 50 (Currently amended):   The device of claim 49, wherein the ~~final electrode configuration defines a combination of two electrodes from a~~ set of electrodes comprises at least eight electrodes.

Claim 51 (Currently amended):   The device of claim 39, wherein the processor generates a suggestion of the first and second ~~parameter~~ electrode configurations to a clinician.

Claim 52 (Original): The device of claim 39, wherein the processor receives user input indicating observed efficacy.

Claim 53 (Original): The device of claim 39, wherein the processor updates the genetic algorithm based on the observed efficacy.

Claim 54 (Currently amended):   The device of claim 53, wherein the processor updates the genetic algorithm by performing at least one of cross-over between different solutions identified by the genetic algorithm ~~and~~ or mutation of one or more solutions identified by the genetic algorithm.

Claim 55 (Currently amended):   The device of claim 54, wherein the genetic algorithm identifies solutions associated with the first and second ~~parameter~~ electrode configurations, and the processor updates the genetic algorithm by generating one or more successive generations of the solutions.

Claim 56 (Original): The device of claim 54, wherein cross-over includes swapping electrodes between different solutions.

Claim 57 (Original): The device of claim 54, wherein mutation includes introducing random electrode changes in different solutions.

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